



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,613	04/13/2001	Hisahiko Takeuchi	P20580.P06	3732

7055 7590 03/12/2004

GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

EXAMINER

LEHNER, WILLIAM P

ART UNIT	PAPER NUMBER
----------	--------------

2671

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/833,613

Applicant(s)

TAKEUCHI, HISAHIKO

Examiner

William P Lehner

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5,6,7
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Priority*

1. Foreign priority has been granted to 12/22/02.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Blinn (WO 99/49417).

4. In regard to claims 1, 9, 10, and 11, A computer-readable recording medium on which a game program for displaying a scene in a virtual three-dimensional space on a screen is recorded, the game program causing a computer to execute a process Note the personal computer system for implementing a software rendering system. The computer stores computer-executable instructions for displaying a scene in system memory, hard drives, ect. (page 18, line 27 – page 19, line 19). Personal computers are often used for games. This system includes a game pad and a game port (page 19, lines 25-28) for use with games. This system is for use in 3D graphics (page 1, lines 4-5).

5. Comprising: dividing the scene into a plurality of regions in accordance with distances from a prescribed viewing point in a depth direction; The scene is divided into regions called fog layers with distances in a depth direction from a viewing point (FIG 5). Setting filtering levels for the respective divisional regions; performing filtering processing that imparts visual effects to respective regions of

the scene in accordance with respective set filtering levels; The filtering levels are the amount of fog in the fog layers. This is a value between zero and one, depending on how far the layer is from the viewpoint. The background layer is opaque and has a fog amount of one (page 10, line 15 – page 11, line 18). The performing filtering is read on the combining of the fog with objects. And displaying a scene obtained by the filtering processing on the screen. The scene is rendered for display (page 11, lines 2-3).

6. In regard to claim 2, The recording medium according to claim 1, wherein a rule for division into the regions and filter data specifying the filtering levels that are set for the respective regions are further recorded on the recording medium, the program causing the computer to execute the process further comprising: The filter data is the fog factor  $f$  which represents the amount of fog between the viewpoint and the object. The rule for division into regions is the depth relative to the viewpoint (page 1, line 28 – page 2, line 5). The total amount of fog between regions such as  $z_a$ - $z_b$  is also represented as  $g$  or  $h$  (page 15, lines 1-7 and FIG 5).

7. Dividing the scene into the regions according to the division rule; setting the filtering levels specified by the filter data for the respective divisional regions; Note the rejections to claim 1. Storing, in a first storage device, each of the filtering levels that is set for an associated divisional region so as to be correlated with pixels belonging to the associated divisional region; The fog applicator simulates fog depending on the fog model, so the fog model must be stored here. The fog model corresponds to the filtering levels. Storing pixel data of a scene obtained by the filtering processing in a second storage device; reading the pixel data from the second storage device; and sending the pixel data to a display device. The second storage device where the pixel data is stored is the frame buffer. The rendering pipeline reads pixels from the frame buffer and sends them to the display screen (page 2, lines 20-27).

8. In regard to claims 3 and 12, The recording medium according to claim 1, wherein the setting further comprises setting the

filtering levels so that a filtering level for a region closer to the viewing point is set earlier. This method uses the over and atop operators to combine image layers representing objects and fog. The front layers nearest the viewpoint are composited first (page 12, lines 11-20). The over and atop operators are additive, so combining two nearer translucent fog layers creates an even foggier deeper layer (page 14, lines 4-25). Each pixel is computed using the objects and layers of fog in front of it, so this algorithm must start at the viewpoint (page 14, lines 1-3). The fog 48 from the first pixel A is combined with the fog of pixel B to create more fog 56 (page 4, lines 19-28 and FIG 2).

9. In regard to claims 4, 6, 13, and 15, The recording medium according to claim 1, wherein the performing filtering processing further comprises generating a filtered scene by imparting a uniform visual effect to an original scene as a whole and combining the filtered scene with the original scene at a ratio corresponding to each of the filtering levels set for the respective regions. The front image layer is rendered first (page 12, line 17) and has at least some fog (page 2, like 3), an amount of fog uniformly applied to all layers because they are deeper than the first and more foggier. Further, pixels may be rasterized in front to back order (page 3, line 9). This uniform amount of fog of the first layer is multiplied in ratios (1-j) for each deeper fog layer.

10. In regard to claims 5 and 14, The recording medium according to claim 1, wherein the original scene is defined by a two-dimensional original image generated by performing perspective projection on the scene with respect to the viewing point and information relating to the two-dimensional original image and indicating distances from the viewing point in the depth direction. Two-dimensional image layers are projected to the viewpoint with respect to the depth distances (FIG 5). As is conventional in 3D graphics, objects in a scene are clipped to a view volume and geometrically transformed into a view space / display screen. (page 2, lines 11-16). The view space corresponds to a two-dimensional original image. This process is known as perspective projection and it provides a sense of depth.

11. In regard to claim 7 16, 18, and 19, The recording medium according to claim 4, wherein the filtering levels comprise degrees of opaqueness and the combining further comprises either additive combining or semitransparent combining using the degrees of opaqueness. The levels of fog are degrees of opaqueness. The over operator is semitransparent combining (page 5, lines 20-21). The atop operator is additive combining (page 14, line 4-25).

12. In regard to claims 8 and 17, The recording medium according to claim 1, wherein the visual effects comprise either blurring effects or diffuse glow effects. Blurring has the same effect in the art as fog. They both make the image harder to see by making the image more opaque. Glow effects may also be created with this model. They are diffuse because they fade with distance (page 15, lines 9-20).

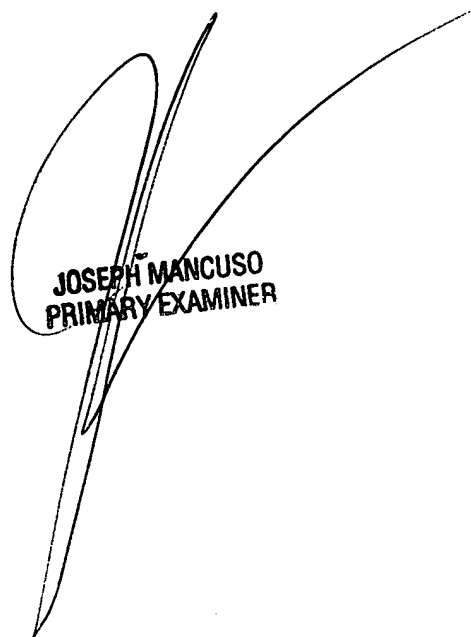
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P Lehner whose telephone number is 703-305-0682. The examiner can normally be reached on 8:30 - 5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on 703-305-9798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WPL



JOSEPH MANCUSO  
PRIMARY EXAMINER